

REMARKS

Claims 1, 3-12, 14, and 16-33 are currently pending. Claims 1, 12, and 21 are the pending independent claims. Applicants understand that the previously presented amendments to the specification have been entered. Claims 1 and 12 are amended to further clarify the claimed subject matter, and no new matter is entered into the case by the amendments.

On the merits, the Examiner rejected the subject matter of each of Claims 1, 3-6, 9-12, 14, and 16-20 as allegedly anticipated by U.S. Patent No. 5,352,276 to Rentschler et al. ("Rentschler"). In addition, the subject matter of each of Claims 1, 3-12, 14, and 16-33 was rejected as allegedly obvious over U.S. Patent No. 4,861,352 to Cheng et al. ("Cheng") taken in combination with a series of alleged prior art "admissions" in Applicants' specification. The subject matter of each of Claims 1, 3-12, 14, and 16-33 was also rejected as allegedly obvious over the Rentschler patent taken in combination with the Cheng patent, and optionally, the alleged prior art "admissions." Finally, the Examiner raised a series of objections to the drawings and alleged new matter.

Each of the foregoing rejections is respectfully traversed and favorable reconsideration is requested in view of the above amendments and following remarks.

A. Claims 1, 3-6, 9-12, 14, and 16-20 Are Not Anticipated

Turning first to the anticipation rejections based upon the Rentschler patent, independent Claims 1 and 12 each call for use of a venturi-type inline stripper unit used to strip dissolved VOC's from the liquid part of a two-phase flow extract conducted up to adjacent the surface of the ground using a subterranean well. The groundwater in the two-phase flow is contaminated by VOC's dissolved in the liquid part of the material. The venturi-type stripper is effective in stripping VOC's from the liquid phase. These VOC's pass into the gaseous phase.

Rentschler is a different type of system which uses entirely different technology, namely a stripper column. In Rentschler, contaminated groundwater is carried to the top of a column of trays and then allowed to flow down through the column by gravity. The water is stripped of contaminants by a countercurrent flow of

air up through the water while it cascades downwardly through air-permeable trays of the column. This is the type of system Applicants' invention is intended to improve upon.

Rentschler does not use anything remotely resembling a venturi-type inline stripper for remediation of a two-phase flow of groundwater extract, and the Rentschler system does not act on a two-phase flow being brought up from subterranean depths. In fact, it could not do so, even if Rentschler wanted it to. His system could not make a vapor part of a two-phase flow brought up to the surface move downwardly through the arrangement of plates with the liquid part. No distinct vapor phase flows downwardly through the plates in Rentschler's column. It would be physically impossible. The only flow of contaminated material down through the plates is of liquid. Nor is the stripper of Rentschler "inline" as erroneously stated in the office action. According to Merriam-Webster's Online Dictionary, "inline" means having the parts or units arranged in a straight line. The stripper of the present application is said to be inline because the inlet, stripping portion, and the outlet are linearly arranged in succession in the process flow line. In contrast, the Rentschler stripper has a single inlet with multiple outlets that are not linearly arranged in the process flow line (Fig. 1), and so clearly cannot reasonably be called an "inline" stripper as that term is used in Applicants' claims. Rentschler plainly does not anticipate or allude in any way whatsoever to a high-power, dynamic flow regime along the lines of the venturi-type separation technology called for Applicants' claims.

Furthermore, in the Final Office Action, limitations in the claims are wrongly ignored and not given full consideration. According to MPEP 2143.03, all words in a claim must be considered in judging the patentability of that claim against the prior art (*In re Wilson*, 165 USPQ 494). Additionally, according to MPEP 2114, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. Even if the prior art device is said to perform all the functions recited in the claim, the prior art cannot lawfully be said to anticipate an apparatus claim unless all structural limitations are satisfied. In this case, the structural differences between the apparatus of Rentschler and the presently claimed apparatus

would be immediately apparent to one of ordinary skill in the art reading the reference and viewing its figures in relation to Applicants' claims as illustrated in the above remarks. For example, among other things, Rentschler does not disclose an inline venturi-type separator as a component of the apparatus.

Claims 3-6 and 9-11 depend from Claim 1, and claims 13-20 depend from claim 12, and add further important elements and limitations also not found in Rentschler. The claims are patentable at least for the same reasons that Claims 1 and 12 are patentable, discussed above.

Accordingly, the anticipation rejection based on Rentschler is untenable and must be withdrawn. Reconsideration and allowance of claims 1, 3-6, 9-12, 14, and 16-20 are hereby respectfully requested.

B. Claims 1, 3-12, 14, and 16-33 Are Patentably Distinct Over the Cited References

As for the obviousness rejections based upon hypothetical combinations of (1) Cheng and the alleged prior art admissions in Applicants' specification and (2) Rentschler together with Cheng patent and, optionally, the alleged admissions, it is respectfully submitted that none of these purported combinations remotely suggests the invention as called for in independent Claims 1, 12, and 21.

There is no apparent motivation or suggestion that would cause a person of skill to obviously combine these alleged prior art references in the first place. Even if it would have been "obvious to try" to combine them after the manner of Applicants' invention, however, the resulting combination would not provide systems having all the features and limitations called for in the claims. The Examiner has failed to show how a person of ordinary skill would find it obvious to fashion Applicants' claimed system from consideration of these or any other known combinations of prior art references.

The alleged admissions of prior art cited by the Examiner state no more than that it is known to transport contaminated groundwater up to the surface using various well systems for above-ground treatment, on the one hand, and that it is known to use a knockout or similar vessel after a stripper to allow for more facile separation of gas and liquid phase process streams, on the other hand. This admits nothing toward

Applicants' invention, and the Examiner's attempts to somehow "penalize" Applicants for their forthright acknowledgment of conventional aspects of conventional practices is unfounded. None of this foreshadows Applicants' claimed invention.

Thus, the alleged admissions concede nothing more than what is already apparent in, for instance, the Rentschler patent. Neither the alleged admissions, nor the Rentschler patent, nor any other reference cited by the Examiner discloses or suggest an integrated system as claimed for withdrawing a two-phase flow of groundwater to the surface with an in-line venturi-type stripper to cause VOC's from the liquid phase of the two-phase flow of contaminated groundwater extract brought up to the surface for treatment to be transferred into the vapor phase.

The Examiner unavailingly attempts to fill these gaps in the teaching of the prior art by adding to the Cheng patent to the mix of prior art applied against the claims. While Cheng does speak of use of some form of a venturi stripper, the stripper of Cheng is a special application of adding a "minuscule stripping substance" to a fluid mixture to allegedly achieve a better separation. The combination of a compression cone, a neck, and an expansion cone as used in Cheng is known in the art to be a typical venturi configuration, and Applicants have never asserted they invented a venturi device *per se*.

Nothing in the cited art would have prompted one of ordinary skill to combine Cheng's venturi with the remaining cited art in the manner of Applicants' claimed system. As the Supreme Court has recently explained,

a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.

KSR Intern. Co. v. Teleflex Inc., 127 S.Ct. 1727, 1741 (2007). Thus, in the words of the Federal Circuit,

“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”

See In re Kahn, 441 F.3d 977, 988 (Fed. Cir. 2006) (Cited with approval in *KSR*).

Such reasoning is absent in the present case and consequently, the cited assembly of references cannot reasonably be said to render the subject matter of Claims 1, 12, or 21 (or their dependent claims) obvious. Nothing in the art or in the alleged “admissions” would have suggested the feasibility of liberating groundwater-bound VOC’s by inducing a two-phase flow of subterranean groundwater mixed with air/vapors to the surface and then acting upon this deliberately induced two-phase flow with a venturi-type device followed by separation into liquid and gas phases. The Examiner has consistently failed to appreciate this critical distinguishing feature of Applicant’s claimed system. Nothing teaches one of skill to purposely apply a venturi stripper to a deliberately induced two-phase flow regime of contaminated groundwater brought up to the surface for the purpose of treating the mixture to separate dissolved VOC’s from the groundwater. This is not an obvious approach for achieving such a separation, and the obviousness rejections cannot reasonably be maintained.

Even if there were some suggestion or motivation in the prior art to make the imagined combination, such a combination would improperly change the principle of operation of the primary cited reference. According to MPEP 2143.01, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810 (CCPA 1959).

In this case, the primary reference, Rentschler, requires a countercurrent flow of relative to liquid, meaning that the gas flows opposite the liquid stream being processed. Applicants’ system is completely contrary to this. Applicants purposefully seek to act on a concurrent two-phase flow. *See* Claim 21, in particular. Further, in the stripper of Rentschler, the counter-currently flowing gas phase and liquid phase are separated and diverted from one another within the stripper itself.

Cheng does not suggest bringing up a two-phase flow of VOC-contaminated groundwater through a subterranean well structure for being processed in a venturi stripper, after which a gas flow containing contaminants transferred from the liquid phase are physically separated for, among other things, further treatment and/or recycle as taught in the present specification/claims. The stripper of Cheng does not separate and divert the gas phase from the liquid phase into two output streams, and would require further vessels, such as those taught in the present application, to achieve such separation. If the modification proposed in the office action were to be made, one would have to modify Rentschler over and above what is disclosed in either Rentschler, Cheng, or the alleged admitted prior art in order to achieve a system of bringing up and treating a deliberate two-phase flow of VOC-contaminated groundwater, and the principle of operation of the Rentschler device would have to be dramatically and non-obviously altered. The only way to combine Rentschler, Cheng, and/or the alleged admitted prior art is through the use of impermissible hindsight after gaining knowledge of the Applicants' application. Accordingly, Applicants respectfully urge the Examiner to withdraw all rejections and to reconsider and allow all pending claims.

C. The Drawing Objections.

It is noted that the Examiner has approved drawing Figs. 1 and 3, but continues to object to drawing Figs. 2 and 4.

As for Fig. 2, the Examiner indicated that the proposed drawing changes submitted with Applicant's September 20, 2007, amendment were not approved. In the September amendment, in response to the Examiner's previous indication that the deletion of the cross hatching made the drawing more difficult to understand, the cross hatching was restored in the previously presented drawings. In the present Office Action, the Examiner indicates that cross hatching is usually reserved for solid materials, and alleges that it is unclear what the cross-hatched shape in the chamber 36 is intended to represent. Also, it is alleged that the intended structure corresponding to reference number "32" is unclear. In response to these objections, a replacement drawing sheet for Fig. 2 is included herewith.

As the Applicant's have attempted to explain to the Examiner previously, the conical shape in Fig 2 is intended to represent the turbulent fluids exiting the narrow throat of the air amplifier 34 and expanding down the length of the conduit 36. Hatching was originally applied to this fluid / vapor cloud to order to better illustrate it in contrast the remainder of the drawing. Since the Examiner has objected to the illustration of this fluid cloud both with hatching and without hatching, the Applicants now propose to shade the fluids with the symbol from the *Guide for the Preparation of Patent Drawings* for "Gases and the Like." A new reference number 68' is also added with a lead line pointing to the expanded fluids.

In addition, the hatching is removed from air amplifier 34.

Finally, the tip of the lead line for reference number 32 has been moved slightly so that it more clearly contacts the front of the air amplifier 34 in order to indicate the location of the throat or constriction which the fluids pass through before they are allowed to expand.

Also, a replacement drawing sheet for Fig. 4 is provided, adding a "Prior Art" label. However, it is noted that Fig. 4 discloses "prior art" only in the sense that the extraction well disclosed therein was known prior to the Applicants' invention. The use of such a device in conjunction with the other claimed elements to strip VOC's from the contaminated groundwater is entirely new and non-obvious in its totality as disclosed/ claimed, and is certainly not prior art.

In light of the foregoing, it is respectfully requested that the replacement drawing sheets be entered and that all objections to the drawings be withdrawn.

D. The Objection To Alleged New Matter

It is also alleged that the amendment filed September 20, 2007, introduced new matter into the disclosure. The amendment to the specification identified two previously unlabeled elements in Fig. 1 as "treatment vessels." The Office Action alleges that there is no support for this added material in the original disclosure.

Applicants' respectfully disagree. On page 15, first full paragraph, it is disclosed that the vapor phase stream may be further treated to recover and/or destroy the contaminants. One of ordinary skill in the art would recognize that such treatment

would occur in a “vessel” or other container. In Example 1, an example embodiment even includes a 55 gallon drum of activated charcoal through which the vapor phase is passed to remove the volatile contaminant vapors via adsorption before discharging the remainder of the vapors to the atmosphere. Clearly this constitutes disclosure of a “treatment vessel”. Accordingly, the previously submitted amendment cannot reasonably be said to have introduced any new matter into the case, and reconsideration and withdrawal of the objection is respectfully requested.

E. Conclusion

As a final matter, the Office Action requests identification of the “similar extraction wells [that] were known in the prior art.” In response, Applicants respectfully point to the specification, from page 6, line 28, through page 7, line 3, where several patents disclosing such wells are set forth.

In light of the foregoing, Applicants urge the Examiner to reconsider the application, to withdraw all rejections and objections, and to issue a notice of allowance at the earliest possible convenience.

In the event this response is not timely filed, Applicants hereby petition for the appropriate extension of time and request that the fee for the extension along with any other fees which may be due with respect to this paper be charged to our Deposit Account No. 12-2355.

Respectfully submitted,
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Enclosure:
Red-lined Drawings
Formal Drawings

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